

# 2003-04 Rabbit Hunter Cooperator Survey Report



**Kentucky Department of Fish and Wildlife Resources**



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## Introduction

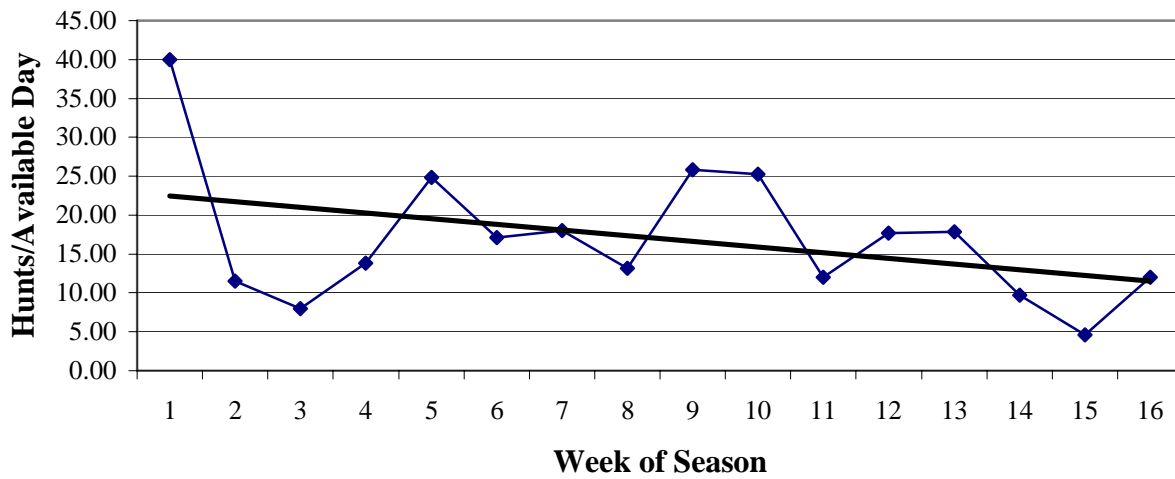
The Rabbit Hunter Cooperator Report is a summary of 2 annual surveys conducted by the Kentucky Department of Fish and Wildlife Resources (KDFWR) to estimate rabbit production, hunter effort, and hunter success. First, the Rabbit Hunter Log Survey is a diary-type hunting log used to record information including date of hunt, county hunted, hours hunted, number of hunters, number of dogs, number of eastern cottontail rabbits, swamp rabbits, and Appalachian cottontail rabbits (jumped, harvested, and wounded). Volunteer hunters were asked to keep the log to date as the hunting season progressed. At the season's conclusion, they mailed the log to KDFWR for analysis. The Mail Carrier Survey represents the second survey employed to monitor rabbit populations across the state. Volunteer mail carriers recorded rabbit observations as they traveled their rural delivery routes during the last full week (6 delivery days) of July. Survey cards provided space for observations of young and adult rabbits for each of the survey days. Observers also recorded the number of days surveyed, the length of the route, and the total miles driven. The mail carrier data is used to forecast the upcoming hunting season, monitor the population, and estimate rabbit productivity. Volunteer postal workers are issued a free subscription of *Kentucky Afield* magazine for their support, whereas volunteer hunters received their log from the previous season, a new log form, this report, and a gift for their participation.

### I. Rabbit Hunter Log Survey

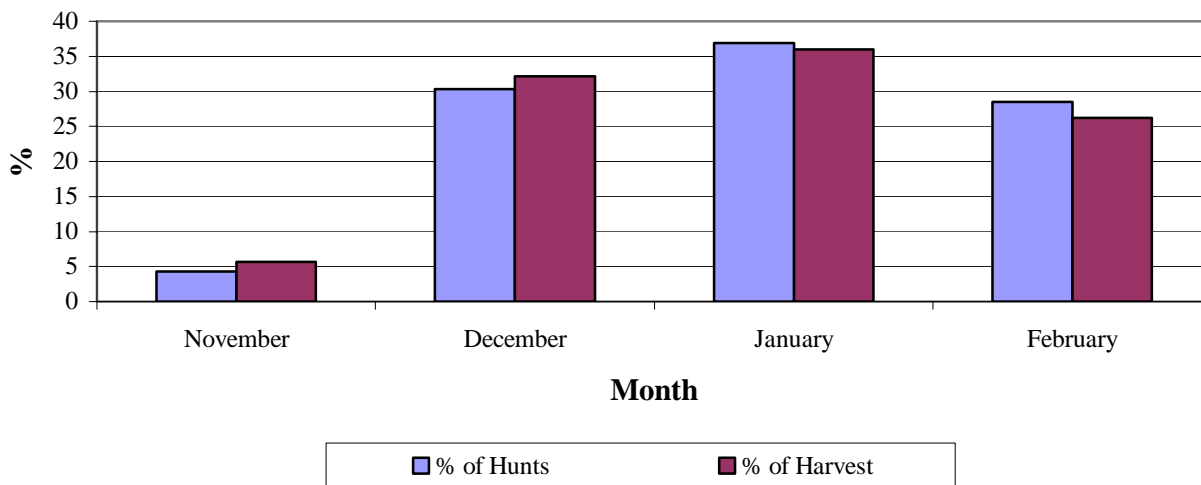
Hunting logs were received from 105 hunters who averaged 15 hunting trips for the season. Data were grouped into weekly and monthly subsets and physiographic region subsets (Appendix A) to identify trends within the season and across the state. From 1,593 logged hunts, the average hunt included jumping 6 rabbits, harvesting 2 rabbits, and spending 3.7 hours afield with 2.4 hunters. Hunters recorded hunts in 93 counties across the state (Appendix B), and they used an average of 4 dogs per hunt. Nearly every hunt (99%) included dogs.

The last 3 hunter log surveys revealed similar trends in hunter effort. Hunters averaged approximately 16 hunts/year, and hunting pressure decreased as the season progressed (Figure 1). Peaks of hunting were at the beginning of the season, Thanksgiving and Christmas holidays, and the close of the season in the Eastern zone. Monthly subsets revealed the proportion of hunts and the proportion of harvest were quite similar, but later season hunts (January and February) were slightly less productive (Figure 2). Cooperator numbers are fluctuating, and last year our cooperators increased by 6% (Table 1).

**Figure 1. Hunts per available day index from Kentucky Rabbit Hunter Log Cooperator Survey, 2003-04.**



**Figure 2. Hunting effort and harvest by month from the Kentucky Rabbit Hunter Log Cooperator Survey, 2003-04.**

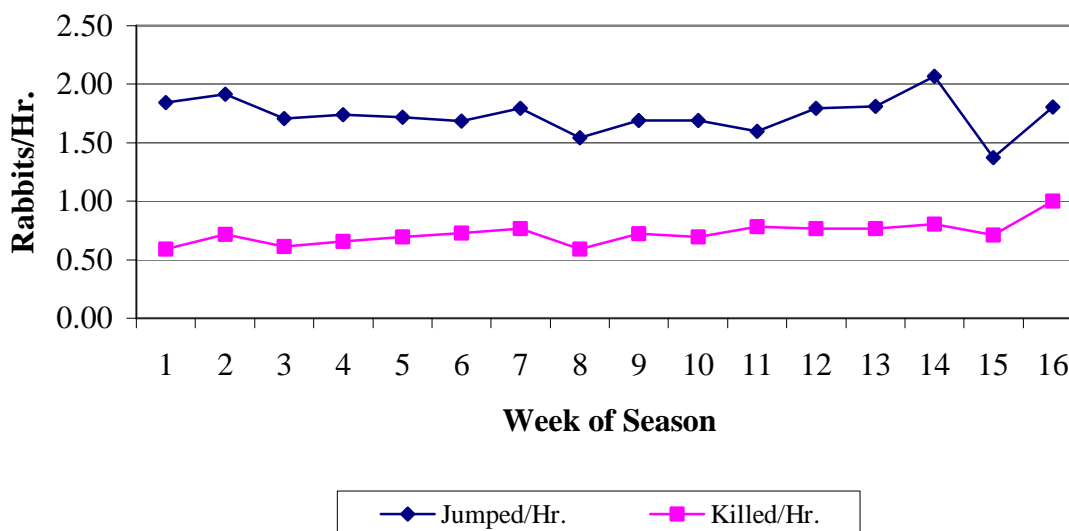


**Table 1. Summary statistics from the Rabbit Hunter Log Survey in Kentucky, 2001-2004.**

<b>Statistics</b>	<b>2001-02</b>	<b>2002-03</b>	<b>2003-04</b>
Cooperators	117	99	105
Hunts	1,870	1,589	1,593
Counties	103	99	93
Hunts/Hunter	16	16	15
Hours Hunted	6,857	6,037.5	5,847.9
Dogs Used	7,396	6,755	6,883
Total Rabbits Jumped	13,758	11,276	10,126
Total Rabbits Harvested	6,198	5,129	4,222
Total Rabbits Wounded	318	226	259
Hunting Mortality (%)	47	48	44

Total rabbits jumped averaged 6.4/hunt (1.7/hr), and rabbits harvested averaged 2.7/hunt (0.7/hr). Compared to 2002-03, jump rates decreased by 11%, whereas harvest rates decreased by 14%. Jump and harvest rates remained fairly constant throughout the season (Figure 3). Additionally, the jump and harvest rates by species varied little over the last three seasons except for Appalachian cottontails (Table 2). However, sample sizes for Appalachian cottontails are far too low to indicate any change in the population or hunter effort and success. Harvest and jump rates by species were calculated by the following assumptions: 1) if Appalachian cottontail or swamp rabbits were jumped, it was assumed Appalachian or swamp rabbits were being hunted, 2) if eastern cottontails were jumped and an Appalachian cottontail or swamp rabbit was jumped, it was assumed the Appalachian cottontail or swamp rabbit was being hunted, and 3) if no rabbits were jumped, it was assumed the eastern cottontail rabbit was being hunted (because cottontails comprise 98% of the harvest and are the most common).

**Figure 3. Total rabbits jumped and killed per hour from the Kentucky Rabbit Hunter Log Cooperator Survey, 2003-04.**

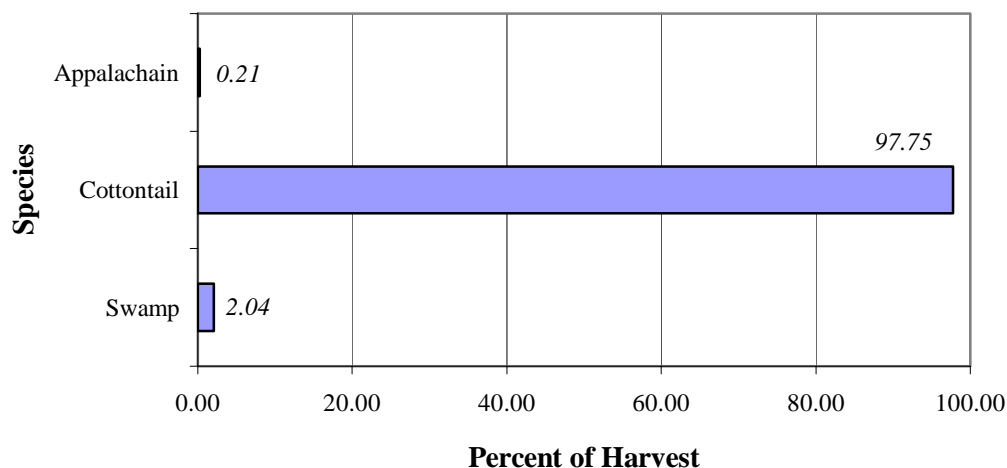


**Table 2. Rabbit jump and harvest rates by species in Kentucky, 2001-2004.**

	Eastern			Swamp			Appalachian		
Year	01-02	02-03	03-04	01-02	02-03	03-04	01-02	02-03	03-04
Total Hunts	1,818	1,535	1,533	240	49	53	4	5	7
Jumped/Hunt	7.36	7.02	6.27	4.86	4.39	4.25	0.69	1.60	4.14
Jumped/Hour	2.02	1.87	1.73	0.99	0.90	0.91	2.75	0.40	0.94
Harvested/Hunt	3.31	3.21	2.65	2.27	1.94	1.62	0.38	0.60	1.29
Harvested/Hour	0.91	0.85	0.73	0.46	0.40	0.35	1.50	0.15	0.29
Wounded/Hunt	0.17	0.14	0.14	0.02	0.06	0.23	0.06	0.20	0.14
Wounded/Hour	0.05	0.04	0.04	0.00	0.01	0.05	0.25	0.05	0.03

Over the past three hunting seasons, hunting mortality (harvested and wounded individuals) remained less than 50% of the rabbits jumped (Table 1). Wound rates (2%) have remained constant as well. Cottontail rabbits continue to dominate the harvest as expected (Figure 4).

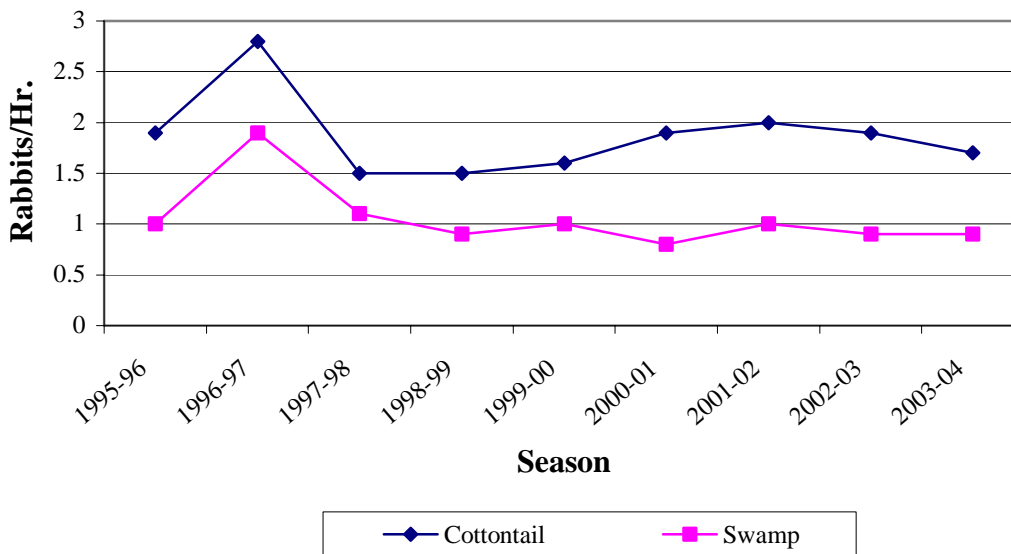
**Figure 4. Proportion of rabbit species in the harvest from Rabbit Hunter Log Cooperator Survey in Kentucky, 2003-04.**



We have a particular interest in reports of swamp and Appalachian cottontail rabbits. Both species suffer from habitat loss and populations are declining rangewide. Data from this year's hunting logs showed that Appalachian cottontails were jumped 29 times and 9 rabbits were harvested. Reports of Appalachian cottontails were significantly up this year, but our sample size was too low to infer any change in population. This seasons observations came from Lewis county. Swamp rabbits were jumped 223 times and 86 rabbits were harvested. Reports came from 12 western counties. Based on data from hunter logs, swamp and eastern cottontail populations remain stable, but both species experienced population booms in 1996 (Figure 5). Inadequate sample sizes make annual comparisons of Appalachian cottontail data impossible. Further

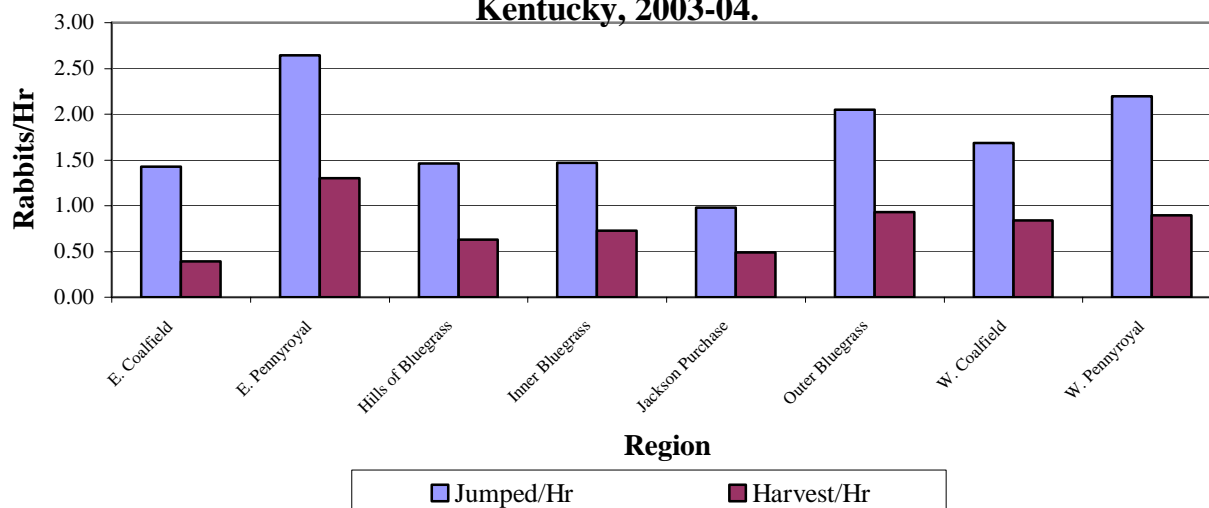
investigation of swamp and Appalachian cottontail rabbits may be required to identify existing population levels and locations.

**Figure 5. Cottontail and swamp rabbits jumped per hour from Kentucky Hunter Log Cooperator Surveys, 1995-2004.**



The highest rabbit jump rates in the state were found in the Outer Bluegrass, Eastern Pennyroyal, and Western Pennyroyal physiographic regions (Figure 6). The Eastern Pennyroyal region had the highest harvest rates. None of the regions stood apart as the best marksmen, but the Eastern Coalfield region accounted for the dubious honor of the lowest proportion of jumped rabbits harvested at a dismal 27%! The rest of state's percentage of jumped rabbits harvested ranged from 40 to 49%. Hunter participation was especially low in Inner Bluegrass and Eastern Pennyroyal regions. Given the success of the hunters reporting in Eastern Pennyroyal, the bulk of the cooperators may have missed out on some good hunting!

**Figure 6. Rabbits jumped and harvested per hour by physiographic region from the Rabbit Hunter Log Survey in Kentucky, 2003-04.**



## II. Mail Carrier Survey Results

So, what can we look forward to this season? The Mail Carrier Survey provides a glimpse of what we can expect for the upcoming hunting season. The survey is the oldest in the program being completed for 44 years. Although no population estimates can be derived from this data, it does provide valuable trend information showing whether the population is up, down, or stable.

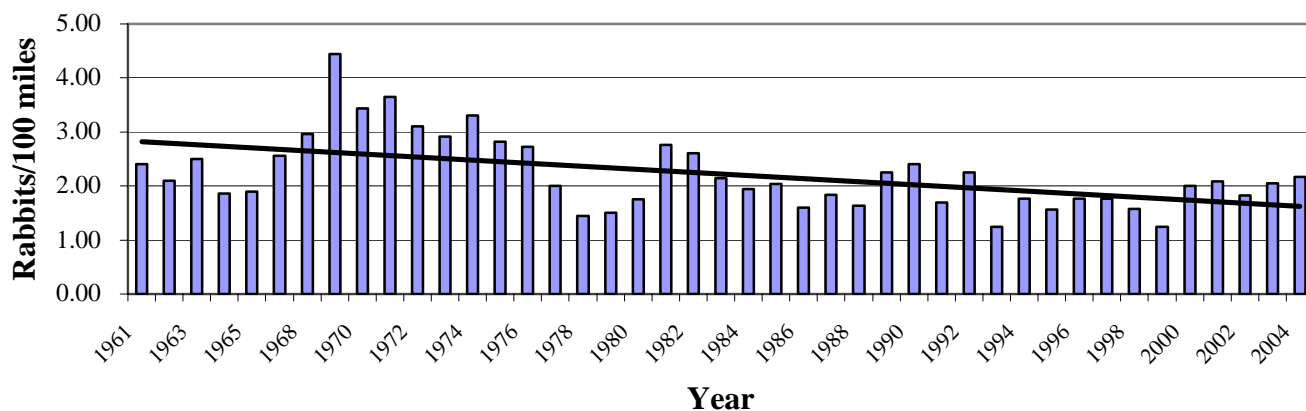
In 2004, mail carriers returned 798 of the approximately 1,200 survey cards issued, which corresponds to a 66.5% response rate. Rural carriers covered 256,713 miles and observed 5,565 rabbits. The statewide observation rate was 2.17 rabbits/100 miles traveled. Juvenile rabbits comprised 56% of the rabbit observations compared to 59% juveniles in 2003. Observations of rabbits/100 miles by physiographic region showed population increases and decreases across the state (Table 3). The Jackson Purchase region incurred a 43.6% increase in observation rate, whereas the Eastern Coalfield region yielded a 9.7% decrease in observations. However, the net result was a 5.85% increase in observation rates across the state. The Outer Bluegrass, Eastern Pennyroyal, and Eastern Coalfield physiographic regions were the only regions that were higher than their long-term average observation rate.

**Table 3. Mail Carrier indices and rates of change in Kentucky, 1961-2004.**

<b>PHYS. REG.</b>	<b><u>Rabbits/100 miles</u></b>			<b><u>Percent Change</u></b>	
	<b>Mean</b>			<b>Mean</b>	
	<b>1961-2004</b>	<b>2003</b>	<b>2004</b>	<b>2004/1961 – 2004</b>	<b>2004/2003</b>
Jackson Purchase	1.64	0.78	1.12	-31.7	+43.6
Western Pennyroyal	2.08	1.69	1.87	-10.0	+10.7
Western Coalfield	1.74	1.50	2.04	+17.2	+15.0
Inner Bluegrass	2.30	1.49	1.79	-22.2	+20.1
Knobs-Outer Bluegrass	2.56	2.51	2.62	+0.23	+4.4
Hills of Bluegrass	2.51	2.09	2.12	-15.5	+1.4
Eastern Pennyroyal	1.68	1.84	1.95	+16.1	+6.0
Eastern Coalfield	2.76	2.99	2.73	-1.1	-9.7
<i>Statewide</i>	2.22	2.05	2.17	-2.3	+5.85

Over the last 44 years of this survey, the decline in the rabbit population is evident (Figure 7). The severe drop in population levels following the winters of 1977 and 1978 was dramatic and populations have not recovered. The rabbit population trend corresponds to a 1.0 % decline per year over the life of the survey. The overall drop in rabbit numbers since the late 1960's can be generally attributed to habitat loss because of land use changes and cleaner agricultural practices. In 2004, the statewide index increased again, and the last 5 surveys have been quite good. Subsequently, rabbit populations have remained fairly stable for the last decade.

**Figure 7. Rabbits observed per 100 miles from the Mail Carrier Survey in Kentucky, 1961-2004.**



## Conclusion

The Mail Carrier Survey and the Rabbit Hunter Log Survey appear to be tracking each other well. Therefore, we can make predictions based on the Mail Carrier Survey results. Breaking down data by physiographic regions generally makes predictions more difficult as sample sizes become smaller compromising reliability. However, by combining physiographic regions into western (Jackson Purchase, Western Coalfield, and Western Pennyroyal), central (Inner, Outer, and Hills of the Bluegrass), and eastern (Eastern Pennyroyal and Eastern Coalfield) zones, projections become a little clearer. With that in mind, the western zone should experience an increase in hunting action, and the central zone should have better success than last year as well. The eastern region is a little murkier as the Eastern Pennyroyal was up and Eastern Coalfield was down. However, despite the decline in the Eastern Pennyroyal physiographic region the population level appears to be at or above the long-term average, so hunting should be good.

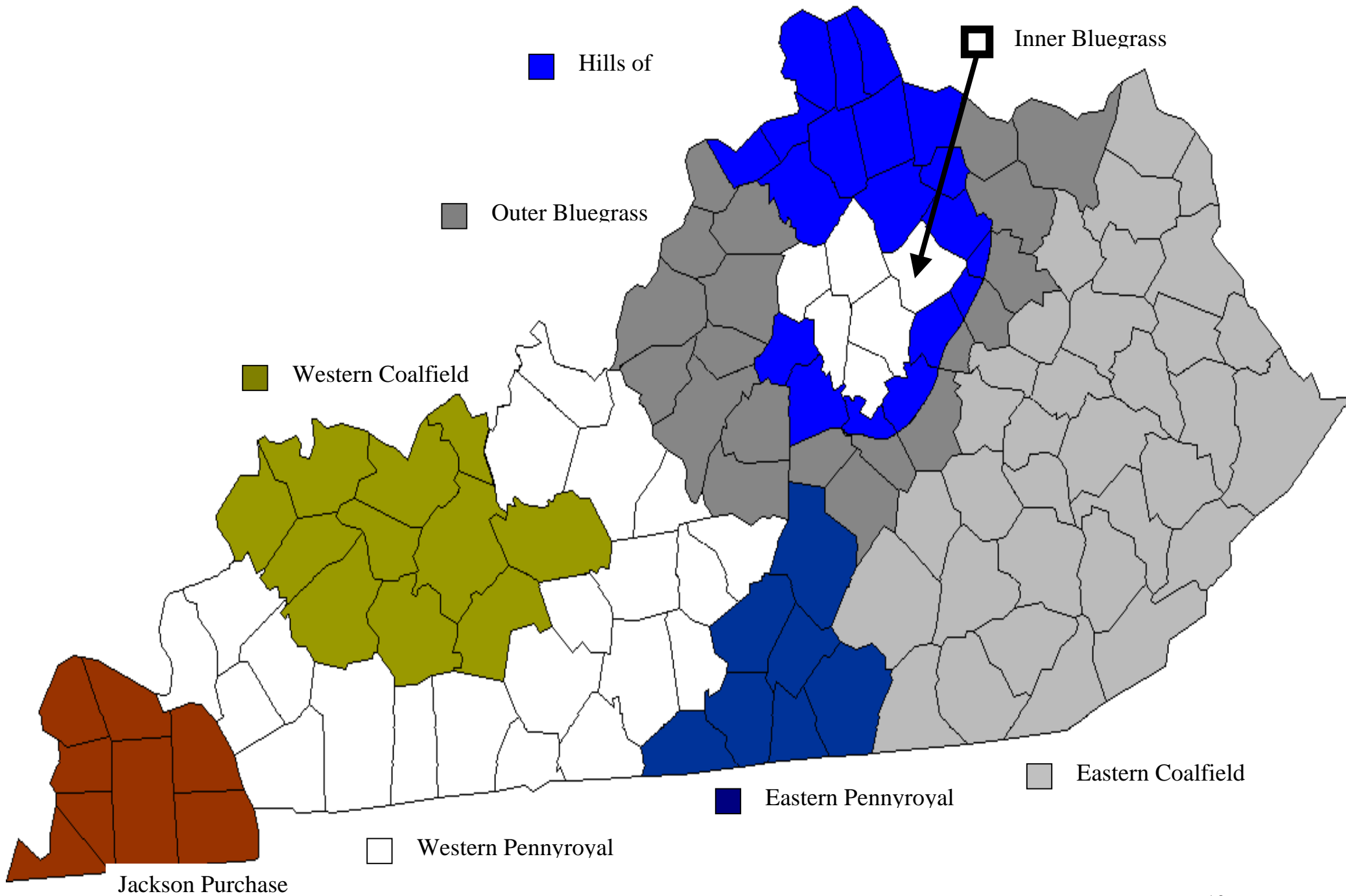
Rabbit populations seem to be stabilizing across the state. Our survey indices are showing oscillations characteristic of population stability. Upon comparison, rabbit populations are far below those on the late 60's and early 70's. Fortunately, rabbits generally have small home ranges and localized management should generate a positive response, but large-scale changes in the cottontail rabbit population in Kentucky will require widespread management of the agricultural environment. Swamp rabbits and Appalachian cottontails requirements are much more difficult to attain particularly when habitat loss is irreversible, so we continue to keep a watchful eye on both of those species.



Overall the 2003-04 rabbit season was fair to good. Over the last 20 years, the population has remained fairly stable with bumps up and down. Last year, jump rates were down 11%, and harvest rates were down 14%. We are optimistic that this year will be better. Another positive note, we gained 6% of our cooperators back last year, but continue hit up your friends and hunting partners to participate. This report is evidence of your efforts at work, and you can see that we can monitor the population with your help. Sportsman continue to lead the way in conservation and funding, and we sincerely appreciate your support! Have a safe and enjoyable rabbit hunting season and we look forward to hearing how you did!

Cover image provided by Wes Siegrist ([www.artofwildlife.com/miniaturepaintings23.html](http://www.artofwildlife.com/miniaturepaintings23.html))

## Appendix A. Physiographic regions of Kentucky.



## Appendix B. Distribution of hunts from the Rabbit Hunter Log Survey, 2003-04.

